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ABSTRACT

The article examines weight lifting training procedures for persons involved in wheelchair sports. Popular myths about weight training are countered, and guidelines for a safe and sound weight or resistance training program are given. Diagrams and descriptions follow for specific weightlifting activities: regular or standing press, military press, behind the neck press, bench press, curl, reverse curl, upright rowing, rowing, pull over, and bent arm pull over. Supplementary exercises are noted in a concluding section. (CL)

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Volume 2, Number 6
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WEIGHT TRAINING FOR WHEELCHAIR SPORTS

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Special thanks and appreciation are extended to Bill Greene and the Washington Smokers which used this basic weight or resistance training program to prepare for the 1978 wheelchair track and field season. Basic lifts and supplementary exercises proved practical and functional for athletes of all wheelchair competition classifications. Individual modifications were made according to each athlete's needs and for use on a Universal Gym. To each, sincere gratitude is expressed. Their willingness to experiment is going to result in many other athletes reaching higher personal goals and greater individual performance levels. Special thanks and appreciation are also extended to Jane S. Bradtke, AAHPER/IRUC Information and Materials Assistant, whose creative art work has added so much to this Practical Pointer.

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All other factors being equal, a strong athlete will surpass performances of an athlete with less muscular strength and endurance. This is as true for athletes who compete in wheelchairs as for their able-bodied counterparts. Until recently, few athletes competing at any level--international, national, regional, state, or local--in wheelchair sports, except for those in competitive weight lifting gave any consideration to overall improvement in muscular strength and endurance as important and integral parts of complete training programs. Even today, too few athletes competing in wheelchair sports incorporate some type of weight or resistance work into their overall training programs.

It is interesting to note that George Murray, winner of the 1978 Boston National Wheelchair Marathon in world record time of 2:26.05, trained with weights three days a week for the year preceeding his record accomplishment; he also worked out on the track three days a week. In terms of days per week, time was equally divided between muscular strength and endurance and track work. Prior to initiating this coordinated program, George Murray could not complete three miles nonstop!

Definitions

Repetitions - number of consecutive or uninterrupted times a specific lift is repeated or performed.

Set - number of times a specified number of repititions for a given lift is repeated in a single workout or training session; this program is designed for one set of each lift although two or three may be used to break a sticking point.

Sticking Point - a weight for which a specific number of repititions cannot be increased after several workouts or training sessions.

Flexion - muscular contraction causes ends of involved bones to move closer together (i.e., wrist and hand move closer to the shoulder with flexion of the elbow).

Extension - muscular contraction causes ends of involved bones to move further apart (i.e., wrist and hand move further from the shoulder with extension of the elbow.

Agonist Muscles - one set of muscles or a muscle group.

Antagonistic Muscles - set of muscles or muscle group that functions in opposition to agonists (i.e., as one muscle group contracts the other relaxes; one muscle group controls flexion of a given joint while its antagonist controls extension).

Debunking the Myths

Misconceptions abound about relationships of muscular strength and endurance and ability to perform specific skills. Because of these misconceptions, many athletes do not receive full benefits from time and effort devoted to training. In fact, approaches and methods followed by some athletes actually interfere with their overall progress and personal development. For example--

- [illegible] of a heavy shot, discus, or javelin in practice does little to [illegible]lop and improve muscular strength and endurance for these field events. In fact this procedure can do a great deal of harm by disrupting flow, continuity, and quickness of movements so important to success in these field events. Any approach that disrupts smooth and efficient execution of specific skill movements should be avoided for all sport events and activities. Muscular strength and endurance should be increased through an appropriately developed and adequately supervised weight or resistance training program.

- Weight lifting and weight or resistance training are <u>not</u> synonomous. Weight lifting is a sport in and of itself; the objective in weight lifting is to lift the heaviest weight possible. Training for weight lifting necessitates lifting heavy weights in practice in the same ways required in competition. On the other hand weight or resistance training is designed to help an individual develop and improve <u>general</u> muscular strength and endurance. Through training in specific sport skills an individual develops the ability to apply increased general muscular strength and endurance in events in which he/she participates. Modifying ways in which certain weight or resistance training exercises are executed provide additional assistance for developing skills for certain track and field, swimming, or other sport events; i.e., do bench presses on a forty-five degree slant board so that the angle and range of motion are the same as in putting the shot.

- Muscular strength and muscular endurance are <u>not</u> synonomous. Muscular strength refers to the amount of work a muscle or muscle group can do in a single all out contraction or effort. Translated to weight programs, muscular strength means the maximum amount of weight that can be lifted one time. Muscular endurance on the other hand refers to the amount of work a muscle or muscle group can do repeatedly against less than maximum resistance or weight. Translated to weight programs, muscular endurance is related to the number of repetitions that can be performed with less than the maximum amount of weight that can be lifted only one time. Obviously, the lighter the weight, the greater the number of repetitions required to attain the same degree or amount of work or muscular endurance.

- Weight for resistance training does <u>not</u> make an individual muscle bound, restrict range of motion, or limit flexibility. The type of weight program--i.e., strength or endurance emphasis--affects and contributes to the degree of muscular definition resulting from these programs along with a number of other factors including basic body type, musculature itself, and certain hereditary factors. A <u>properly</u> designed and appropriately carried out weight or resistance training program actually improves and enhances both range of motion and flexibility. Full range of motion and flexibility in turn aid and further skills and movements for events or sports in which individuals participate.

- Taking part in a weight or resistance training program in no way detracts from the femininity of females who use this training method and approach regularly. Today more than ever before female athletes are using weight or resistance training to enhance their performances on the athletic field. In addition, many beauty queens, television and movie starlets, dancers,and girls next door participate in weight or resistance training with positive results on their figures and femininity.

- While frequency and timing of weight or resistance training programs need to be modified or altered during a given competitive sport season, they should not be eliminated or stopped altogether during these seasons. Athletes who stop weight or resistance training once a competitive season starts find themselves stronger at the beginning of the season than at the end of the season. The end of a season is when athletes want to put it all together in terms of maximum muscular strength and endurance, optimum cardiorespiratory efficiency and effectiveness, greatest skill levels, and highest degree of motivation. These factors result in championship performances and fulfillment of personal goals and season objectives.

Guidelines For A Sound and Safe Program

A few basic and easily applied principles and practices provide the foundation for a sound and safe weight or resistance training program. Muscular strength and endurance are improved through application of the overload principle. For a muscle to increase in either strength or endurance it must be overloaded through use of external resistance or weight. Overload results in an increase in the cross-sectional diameter of involved muscle fibers. A larger muscle fiber, just as a bigger rope or guy wire, is stronger and capable of doing more work for longer periods of time. The legendary Milo was able to lift a full grown bull over head because he had lifted the bull daily from the time it was a calf. As the calf grew so did Milo's muscles and muscular strength.

For best results in applying the overload principle in weight or resistance training adhere to the following guidelines -

- Keep repetitions for each exercise or lift between eight and twelve. If a given weight cannot be lifted eight times, it is too heavy; more than twelve times indicates that the weight is too light for maximum benefits. One set of properly executed exercises is all that is needed for each specific lift.

- Be sure every lift goes from a prestretch--i.e., slightly extended--position if at all possible through the full and maximum range for involved body parts.

- Make each lift in a slow, smooth, continuous, and controlled manner. Too rapid movements result in weight being jerked or thrown; this is not only ineffective and inefficient for building muscular strength and endurance but makes the individual susceptible to injury, possibly a serious one.

- Take two to three seconds for the active or positive portion of each lift and four to five seconds for the return or negative portion of each lift. It is extremely important to execute the return portion of a lift slowly. Some weight training authorities feel that the slow and controlled return of weight is the most important portion of each lift.

- Control breathing by either inhaling and exhaling as normally as possible, or by inhaling during the active or exertion portion of the lift and exhaling during the return portion of the lift.

- Be sure that the exact movement pattern for each lift is fully understood and can be executed exactly before determining initial training resistance or weight for each lift. Accomplish this by using light weights and a limited number of repetitions under the watchful eye and supervision of someone who can make corrections as needed.

- Establish initial training resistance or weight by doing as many lifts as possible for each exercise. If this number is less than eight, the weight is too heavy; more than twelve, the weight is too light. Record weight and repetitions so that adjustments up or down can be made at the next workout session. Follow this procedure until each exercise or lift is done between the specified eight and twelve repetitions. Err if you must in the direction of starting with weights that are too light rather than too heavy; make haste slowly rather than too fast in establishing initial training resistance or weight.

- Be sure lifts are done in the same sequence from workout to workout or training session to training session. In this way the fatigue factor is always relatively the same at various points throughout a workout or training session since lifts are done in the same order. When establishing a workout sequence, place lifts in an order that does not require use of the same muscles or muscle groups in consecutive lifts.

- Allow enough time between workouts for adequate recovery or muscle tissue will be torn down rather than built-up. Plan regular or between season workouts three times a week--Monday/Wednesday/Friday, or Tuesday/Thursday/Saturday routines. Never lift two days in a row; forty-eight to seventy-two hours (two to three days) should be maintained between weight training workout sessions and never more than ninety-six hours (four days). During the competitive season lift two days per week, ideally the day after a big meet or game and again seventy-two to ninety-six hours (three to four days) later.

- Adjust the daily timetable during the period when determining initial training resistance or weight. During this period of time it is both permissible and advisible to work out daily. This not only reduces the total amount of time required to determine initial starting resistance or weight but reduces possibilities of muscular soreness from these new movements and patterns.

- Place hands about a shoulder width apart on the bar unless a different spacing is indicated for a specific exercise or lift. Hand spacing of more than a shoulder width restricts range of motion for a given lift so that its benefits are limited and greatly reduced. Within this weight or resistance training program, hands are moved closer together when they are changed from the basic shoulder width spacing.

- Do as many repetitions of each exercise or lift as humanly possible. Never feel that one or two more lifts could have been accomplished with additional effort. Use weight or resistance activities as another means of developing and furthering personal discipline and mental toughness which are so important to success in sports.

- Increase weight five to ten percent when twelve repetitions have been attained for a given exercise or lift. Expect more rapid progress, increase in weight, and shorter time in reaching twelve repetitions in early stages when using lighter weights than in later stages when weights get heavier.

- Record weight and number of successful repetitions for each exercise and lift during every workout or training session. Only with accurate and exact records can weight or resistance training programs be kept scientific, individualized, and personalized.

- Use spotters (assistants, coaches, other athletes) or weight racks for exercises or lifts in which they are needed or when weight gets heavy when using barbells. The nature of multistation machines or special devices for specific lifts is such that various exercises and lifts can be accomplished safely without spotters or weight racks.

- Make necessary adaptations in using different pieces of equipment and resistance devices according to your own particular condition and situation. For example, curls and reverse curls done in a wheelchair can be more effective with two single handle pulleys, swing bells, or hand dumbbells than with a long barbell. For some individuals certain lifts can be performed more vigorously and safely when the athlete is strapped into his/her wheelchair.

- Use multistation pieces of equipment, special devices designed for particular movements and specific muscle groups, barbells, and swing-bells in place of conventional barbells. Young children and youth can benefit from resistance or weight training activities by using logs, window sash weights, folding chairs, or car axles; homemade barbells constructed with wooden dowels or broom sticks, and different sized tin can filled with various amounts of cement; bleach bottles filled with sand or dirt; stuffed animals filled with buckshot, BBs, or sand; and wooden dowels or broom sticks with objects such as door knobs, pieces of metal, or fishing sinkers attached.

- Be sure weight or resistance training programs and workout sessions are balanced so that both agonist and antagonist muscles--flexors and extensors--are included. Since natural imbalance exists between muscles and muscle groups that work together--as one muscle or muscle group contracts, antagonistic mucles or muscle groups relax--consideration must be given to both sets of muscles in weight or resistance training programs. Both flexors and extensors--i.e., biceps and triceps, quadriceps and hamstrings--must be programmed so imbalance is not further accentuated which can lead to injuries and reduced performances.

- Recognize a sticking point when one occurs. A sticking point is reached when twelve repetitions for a given weight in a specific lift cannot be accomplished after several sessions. If a sticking point occurs, add five, ten, or more pounds to the bar and do fewer repetitions for several days before returning to the weight and repetitions being attempted before modifying the system to break the sticking point. Increasing the number of sets for a given exercise or lift can also be helpful in breaking a sticking point. When increasing the numbers of sets, build up to two or three sets with twelve repetitions in each set before returning to weight and repetitions at which the sticking point occurred. Remember, when using multiple sets, the key is reaching twelve repetitions in the second and third sets,not exceeding this number on the first set when relatively fresh and not fatigued. This also requires personal discipline and mental toughness. Do not rationalize failure to attain twelve repetitions of a given weight for a specific lift as a sticking point. Be sure that such a plateau is a genuine sticking point and not a reflection of less than the all out effort needed in every workout session if it is to provide maximum benefits. These modificiations should be considered and used only as procedures for breaking sticking points for given exercises or lifts. As previously stated, one properly executed set under most conditions is all that is required in this weight or resistance training program to attain desired increases in muscular strength and endurance.

- Consider other variations on occasion to add interest and fun to workouts and training sessions as well as for breaking sticking points: (1) time how long it takes to do a specific number of repetitions of an exercise or lift, or (2) see how many repetitions can be done in a given length of time being sure that this time is not too long. Be sure that basic principles and practices outlined in these guidelines are not compromised when variations of this type are introduced and used.

Weight or Resistance Training Lifts

The following weight or resistance training lifts are designed primarily for adding muscular strength and endurance to the arms, shoulders, upper back, and chest. These lifts are described as they would be done with barbells. Descriptions for each lift include its name, starting position, movements, and special notes about the lift and its execution.

In several instances lifts are done from standing positions. Possible modifications and adaptations are suggested in discussions about some of these lifts and in accompanying illustrations. Obviously, many other applications of these basic lifts can be developed and used according to type of impairment, level of spinal cord leision, medical classification, functional ability, and individuality of each athlete. Basic principles and practices have been presented so that an individualized and personalized weight or resistance training program can be developed in terms of each athlete's specific interests and his/her unique and special needs.

Regular or Standing Press

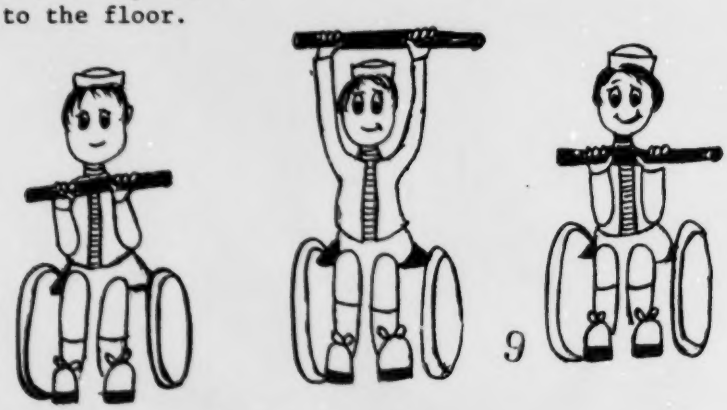
Both Regular or Standing Press and Military Press do not have to be included in the same training program or workout pattern.

Starting Position	Movement
. Stand with feet about a shoulder width apart.	. Lift weight over head in one continuous movement.
. Hold bar with palms of hands facing away from the body.	. Extend arms fully until elbows are straight.
. Start weight from chest level with elbows close to the body and perpendicular to the floor.	. Lower weight to chest level.

Military Press

Both Military Press and Regular or Standing Press do not have to be included in the same training program or workout pattern.

Starting Position	Movement
. Sit on a chair, bench, or on the floor.	. Lift weight overhead in one continuous movement.
. Hold bar with palms of hands facing away from the body.	. Extend arms fully until elbows are straight.
. Start weight from chest level with elbows close to the body and perpendicular to the floor.	. Lower weight to chest level.



Behind the Neck Press

This lift may be done in either a standing or seated position.

Starting Position

- Hold bar with palms of hands facing away from the body.
- Start weight from chest level with elbows close to the body and perpendicular to the floor.

Movement

- Lift weight over head in one continuous movement.
- Extend arms fully until elbows are straight.
- Lower weight to a position behind the neck.
- Lift and lower weight from behind the neck being sure arms are fully extended and elbows straight on each upward movement.
- Return weight to starting position at chest level when set is completed.

Alternate Movements

- Lift and lower the weight alternately from chest level to over head position, to behind the neck, to over head, to chest level, to over head, to behind the neck to over head, to chest level until the set is completed.

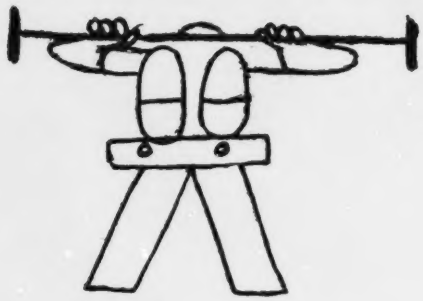
Bench Press

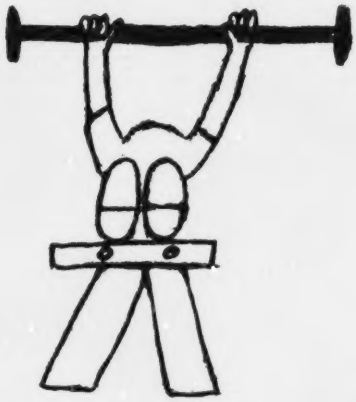
Starting Position

- Lie on the floor or on a bench.
- Hold Bar with palms of hands facing away from the body.
- Start weight from the chest with elbows perpendicular to and directly under the bar.

Movements

- Lift weight straight up from the chest in one continuous movement.
- Extend arms fully until elbows are straight.
- Lower weight back to the chest.





Curl

This lift may be done in either a standing or seated position.

Starting Position

- Start weight at thigh level with palms of hands facing away from the body and elbows straight.

Movements

- Bend elbows and lift weight to shoulder level without bending or rocking the body.
- Lower weight to starting position at thigh level.

Reverse Curl

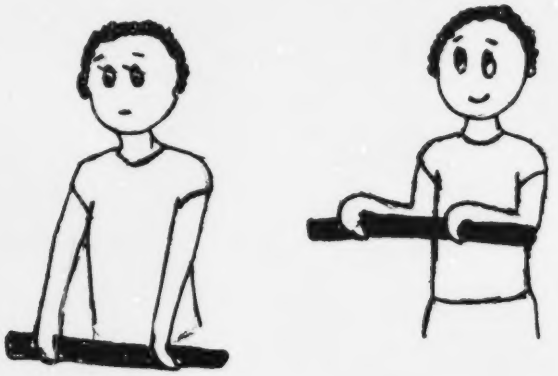
This lift may be done in either a standing or seated position.

Starting Position

- Start weight at thigh level with palms of hands facing toward the body and elbows straight.

Movements

- Bend elbows and lift weight to shoulder level without bending or rocking the body.
- Lower weight to the starting position at thigh level.



Upright Rowing

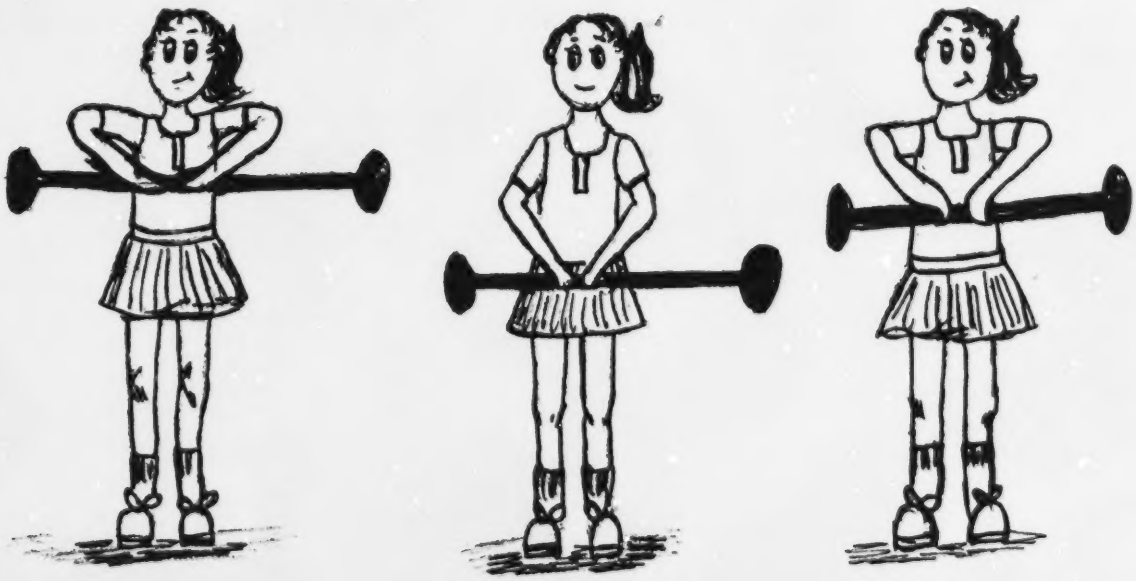
This lift may be done in either a standing or seated position.

Starting Position

- Hold weight at shoulder level with palms of hands facing the body and hands as close together as possible.
- Keep elbows higher than the bar at all times during movements of this lift.

Movements

- Lower weight until elbows and arms are straight.
- Lift weight to starting position at shoulder level being sure to keep elbows higher than the bar throughout all movements of the lift.



Rowing

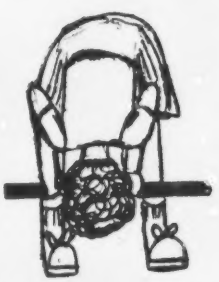
Although this is described from a standing position, it can be done from a wheelchair and modified accordingly.

Starting Position

- Place feet slightly more than shoulder width apart.
- Bend forward from the waist until the upper body is parallel to the floor.
- Hold bar with palms of hands facing toward the body.
- Hold weight off the floor at ankle level.

Movements

- Lift weight until it touches the chest.
- Lower weight to starting position at ankle level.



Pull Over

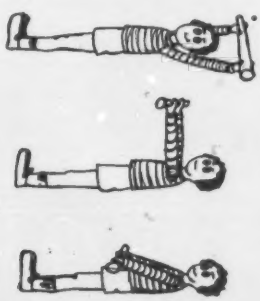
This exercise may also be done as two separate and distinct lifts: (1) move alternately from specified starting position until the weight is directly over the chest and back to the starting position, or (2) move alternatively from the position in which the weight is directly over the chest until it rests on the thighs and back until it is over the chest.

Starting Position

- Lie on the floor or on a bench with arms extended overhead.
- Hold bar with palms of hands facing the ceiling.
- Keep elbows and arms straight at all times during this lift.

Movements

- Lift weight until it is directly over the chest.
- Lower the weight until it rests on the thighs.
- Return the weight to the position directly over the chest.
- Recurn to starting position with arms extended over head.



Bent Arm Pull Over

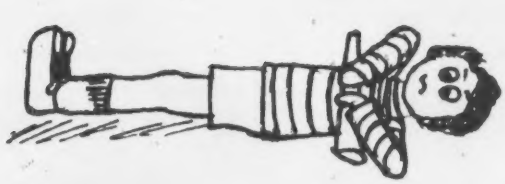
Different sections of involved muscles and muscle groups can be used in this lift by moving the hands closer than the specified shoulder width spacing.

Starting Position

- Lie on the floor or on a bench.
- Hold bar with palms of hands facing the ceiling.
- Bend elbows so bar starts from a position directly behind the head.
- Keep elbows bent fully throughout all movements in this lift.

Movements

- Bring weight as far forward as possible.
- Return weight to starting position directly behind the head.



Supplementary Exercises

A variety of exercises can be used to supplement and complement basic weight or resistance training lifts. These exercises are also designed to enhance overall development of general muscular strength and endurance. Exercises presented emphasize muscles and muscle groups not stressed in the basic weight or resistance training program and/or emphasize muscles or muscle groups antagonistic to those stressed in the basic weight or resistance training program.

The nature of these exercises is such that a variety of ways can be used to record progress indicative of increased muscular strength and endurance -

- Maximum or specified number of repetitions with no time limit.
- Maximum number of repetitions within a specified time limt.
- Length of time required to do a specified number of repetitions.
- Interval approach in which a maximum number of repetitions is done within a given time; this is followed by a rest interval, after which the exercise is repeated. This alternate exercise--rest pattern is continued for the desired number of sets. By increasing the length of exercise time and reducing the time of rest intervals, harder and more beneficial training sessions result.

Suggested supplementary exercises can be done at the completion of the basic weight or resistance training workout or interspersed with the basic lifts. Consistency in sequence and placement of these supplementary exercises are important so that they remain an integral part of and contribute to personal goals and objectives of these portions of a comprehensive training program.

SPECIAL ARTICLES - The following articles focus on strength and muscular endurance training and related topics. Although none of these articles deal specifically with individuals possessing handicapping conditions, principles and procedures can be applied to training and conditioning programs and activities involving these populations. Reprints of each of these articles can be obtained from Nautilus Sports/ Medical Industries, P.O. Box 1783, Deland, Florida 32720.

"Fast-Twitch, Slow-Twitch Muscle Fibers: What is the Truth?" John P. Kalas. Athletic Journal. 57:26-28;January 1977.

"Flexibility as a Result of Exercise." Arthur Jones. Athletic Journal. 57;March 1977.

"Frequently Asked Questions About Muscle, Fat, Exercise." Darden Ellington. Athletic Journal. 56:20,85-89;November 1975.

"Specificity in Strength Training...The Facts and the Fables." Athletic Journal. 57; May 1977.

"Time...As a Factor in Exercise." Arthur Jones. Athletic Journal. 57;April 1977.

"Strength Training: The Present State of the Art." Arthur Jones. Deland, Florida: Nautilus Sports/Medical Industries (P.O. Box 1783, 32720).

Wrist Rotary

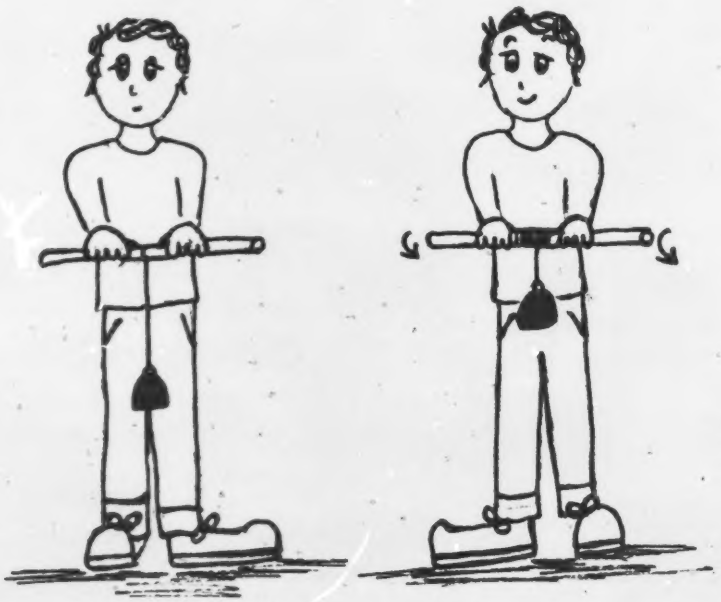
This exercise can be done in either a standing or seated position.

Starting Position

- Make a wrist rotor with a ten pound weight, length of rope approximately equal to the athlete's height, and a piece of broom stick or wooden dowel twelve to eighteen inches long. Tie the rope to the weight and through a hole drilled in the broom stick or wooden dowel. Substitute a bleach bottle partially filled with sand or dirt for the weight.
- Hold the wrist rotor device by the broom stick or wooden dowel with palms of hands facing down.
- Extend arms directly from the shoulders so that elbows are straight and arms remain parallel to the floor throughout the exercise.

Movements

- Let rope out gradually so the weight is slowly lowered toward the floor.
- Reverse direction of the turn so that weight is slowly raised back to the broom stick or wooden dowel.
- Reverse positions of hands and repeat, lowering and raising the weight with palms of the hands facing upward.
- Add still another variation by performing basic lowering and raising movements with the palm of one hand facing down and the other facing upward. Be sure to reverse hands when using this pattern so each palm faces down and up during the exercise.



Bar Dips

A modified version of this exercise can be done using the handles of a conventional wheelchair.

Starting Position

- Take a position on the end of a parallel bar or a special bar dip station found on some multistation exercise machines.
- Place hands on the outsides of the bars with palms facing inward and thumbs around the insides of the bars.
- Start in a vertical position between the bars with arms and elbows straight.

Movements

- Bend the elbows and flex the arms so that the body is lowered gradually between the bars.
- Continue this downward movement until the shoulders are level with the bar.
- Return to the starting position by straightening the elbows and extending the arms.

Alternate Movements

- Hold basic starting position for specified lengths of time if unable to do full or partial bar dips.
- Do one-quarter, one-half, or three-quarter bar dips as part of a progression to build up to the full movement.

Pull-Ups

This exercise can be initiated from either a standing or seated position.

Starting Position

- Hang from a horizontal bar or an appropriate substitute bar.
- Hold bar with palms of hands facing in the same direction as the body (overhand grip) and thumbs wrapped under and around the bar.
- Keep arms and elbows straight while in this position.

Movements

- Bend the elbows, flex the arms, and pull the body straight up until the chin is above the bar.
- Return to the starting position.
- Avoid letting the body swing and using hip or other leg movements during this exercise.
- Change to underhand grip in which palms of the hands face back toward the body so that the little fingers are next to each other on the bar.
- Add other variations by using mixed grip in which one palm faces in and and the other out and/or moving the hands closer than the standard shoulder width.

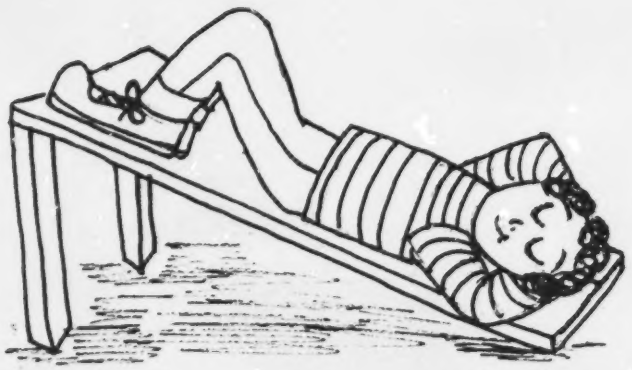
Alternate Movements

- Use a flexed-arm bar-hang in which the chin is held over the bar for as long as possible as an alternate for or supplement to pull-ups.
- Use a straddle chin in which a broom stick or wooden dowel is placed across the seats of two chairs; an athlete takes a supine position on the floor holding the broom stick or wooden dowel much in the same way as for the bench press. From this position, keeping the body straight throughout the exercise, the individual does modified pull-ups or straddle chins or modified flexed-arm bar-hang. This modification can also be accomplished by having one partner stand astride an individual who is supine so that pull-up movements are done with partners holding each others hands and wrists.

Abdominal

Starting Position

- Bend knees and keep feet flat on the floor.
- Place hands and interlace fingers behind the head so that elbows are touching the floor or slant board.
- Strive to do this on a slant board placed at a forty-five degree or greater angle.



Movements

- Sit up and either touch both elbows to the knees simultaneously or touch one knee and then the other on alternate turns.
- Return to the starting position being sure that the elbows touch the floor or slant board.

Alternate Movements

- Change difficulty of this exercise by (1) extending or bending knees, (2) holding or not holding ankles, and (3) extending arms and hands overhead, placing arms and interlacing fingers behind the neck, or folding arms across the chest. Twelve sit-up variations are possible through different combinations of these changes.
- Use a rocking chair exercise in which partners sit with legs spread, ankles of one over the ankles of the other, and hands held. Alternately each partner pulls the other one from supine to sit-up position.
- Do these exercises flat on the floor if unable to be successful on a slant board, gradually increasing the pitch of the slant board.

Swing Bell

These exercises can be done in either a standing or seated position.

Starting Position

- Hold individual resistance objects--hand dumbbells, swing bells, bleach bottles partially filled with sand or dirt--in one or both hands.
- Determine exact starting positions according to specific exercises to be done.

Movements

- Swing weights freely in circles overhead, in front of or to the side of the body, behind the body, between the legs.
- Swing weight from side to side turning the body as far as possible.
- Twist and turn weight overhead.
- Do alternate curls and reverse curls.
- Do lateral raise--hold weight at end of fully extended arm--in standing, sitting, or lying positions, keeping arms and elbows straight throughout the movements.